TECHNOLOGY DEPT

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SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE

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JUL 27 1953
DETROIT 1

Flying Saucer?

See Page 50

A SCIENCE SERVICE PUBLICATION

BACTERIOLOGY

New Vaccine Method

Protection against brucellosis which causes abortion in animals and undulant fever in man, foreseen from development of a new method of making vaccines.

➤ A NEW method of making vaccines has been used by University of California scientists to produce a promising protection against brucellosis in sheep and goats.

The disease causes abortion in cattle, sheep, goats and hogs. At present a vaccine exists for the disease in cattle, but not in other animals. In man, brucellosis infection causes undulant fever which is successfully combated by sterptomycin.

Drs. Sanford Elberg and Mendel Herzberg, California bacteriologists, approached the problem of a vaccine in sheep and goats by a method previously considered but not carried to a conclusion.

The scientists cultured *Brucella melitensis*, the organism that attacks sheep and goats, in a medium containing streptomycin. Most of the organisms were killed. Some survived, however, and these were subjected to stronger doses of streptomycin.

After many generations, a strain of the organism was developed that was not only resistant to streptomycin, but actually depended upon the presence of the drug for its survival and growth in animals.

The scientists' idea was to give the new strain of organisms as a live vaccine, along with streptomycin. When immunity had been conferred, streptomycin would be withdrawn and the organism would cease growing. Thus the immunizing organism would be kept under complete control.

Much to their surprise, the scientists found that their vaccine worked even without streptomycin. In mice, guinea pigs and goats, the vaccine caused the mild infection associated with immunization, but no signs of the disease. Abortion has been prevented in goats in preliminary experiments.

Dr. Elberg is now in England at the Microbiological Research Station, Porton, to use the special facilities of that laboratory to complete his experiments in monkeys.

The scientist stated that the method may prove useful in developing other vaccines for other diseases.

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TECHNOLOGY

Flying Saucer Reports

See Front Cover

➤ SOME FLYING saucer reports were caused by experimental tests of the "Hell Roarer," the Air Force has now revealed.

The "Hell Roarer" is a device for taking night photographs of enemy activity by fast-flying airplanes. It burns powdered magnesium to provide an extremely intense light for more than four minutes.

During the first test flights of the device, conducted at Windsor Locks, Conn., police were besieged with phone calls reporting flying saucers or planes going down in flames.

Contained in a torpedo-like 12-foot cylinder, the mechanism attaches to the airplane's wing and can be turned on and off as required by the pilot. It has built-in warning signals to indicate anything wrong, and can be jettisoned if necessary.

The Hell Roarer, so named because of the roar emitted when in operation, was developed for the Air Force by scientists at Wesleyan University, Middletown, Conn. Special cameras are used to make the night aerial photographs. The Air Research and Development Command's Wright Air Development Center, Dayton, Ohio, is working with the Wesleyan group on the project.

Pulverized magnesium powder burns at an extremely high temperature and must be handled with great care. The Hell Roarer, shown on the front cover of this week's SCIENCE NEWS LETTER, puts out light of approximately 10,000,000 candlepower.

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PLANT PATHOLOGY

Change in Properties Alters Virus Effect

➤ THE EFFECT of a virus disease may be altered by changes in the physical and chemical properties of the virus itself. These changes may actually be mutations, or change in the heredity mechanism.

This is indicated in a study at the University of California at Los Angeles of a virus that causes a disease in tobacco plants known as tobacco mosaic. Drs. Samuel G. Wildman, Irving Rappaport, Albert Siegal and William Ginoza are performing the research under an AEC grant.

Eight different strains of the virus, each of which produces a different symptom of the disease in Turkish tobacco, were studied. Four of the group were identical in four different physical and chemical properties. When injected into a plant, they overcame its natural resistance and invaded the plant.

The other strains differed from the first group in one or more of the four characteristics. They were confined to the local lesions on an infected leaf and could not spread to the rest of the plant.

Correlation of physical-chemical changes of viruses with alterations in the course of a virus disease seems a significant clue to the virus mutation process.

Apparently mutations may be of two kinds: 1. radical changes in the virus protein molecule as indicated by changes in four physical-chemical properties, and 2. subtle changes, manifested only in different symptoms but with no detectable change in physical-chemical properties.

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METEOROLOGY

No Break in Drought Foreseen for Texas

➤ NO BREAK in the Texas drought is foreseen by forecasters at the Weather Bureau in Washington in their outlook for the weather to mid-August.

"Subnormal precipitation" is predicted over most of the state. This means that Texans can expect no more than an inch or an inch and a half in the northern sections, two inches near Houston and in the eastern areas, and under one inch in the extreme southern portions of the state.

It would take at least two or three months of good, ground-soaking rains to relieve the drought permanently.

For the rest of the country, the Weather Bureau predicts that temperatures during the period to mid-August will average below seasonal normals in the eastern and southern sections, as well as in the Pacific Northwest. Above normal temperatures are expected in the Southwest, Great Plains, upper Mississippi Valley and in the western Great Lakes states. Elsewhere, near normal temperatures are predicted.

Rainfall until mid-August is expected to be greater than normal along the Atlantic seaboard, in the Northwest and in Arizona. Besides Texas, subnormal precipitation is also forecast for the Midwest and the northern plains states. In other areas, amounts not far from normal are predicted by the Weather Bureau forecasters.

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MEDICINE

New Medical Certificates Speed World Travel

➤ LESS DELAY and less red tape for international travelers will result from the issuance of revised immunization certificates. They provide travelers with a record of compliance with vaccination requirements in accordance with changes, effective last year, in International Sanitary Regulations. Old certificates will continue to be acceptable until the expiration date of the recorded vaccinations.

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ASTRONOMY

Faster, Clearer Star Photos

Combination of photography and electronics gives astronomers a new, extremely sensitive tool with a 50 to one advantage over that of a photographic plate alone.

➤ CLEARER AND faster pictures of the stars can now be made by a new method that combines electronics and photography.

Still in the development stage, the method was devised by Drs. Andre Lallemand and Maurice Duchesne of the Observatory of Paris, France. It gives extremely clear photographs in much shorter times than has previously been possible.

Combining electronics and photography presents astronomers with a new, sensitive tool for their study of the heavens, just as the electron microscope greatly aided biologists in their study of cells.

The star's light is focused through a telescope, not as usual on a photographic plate, but on a light-sensitive plate made of glass-covered antimony and cesium. This photoelectric plate gives off electrons when hit by light. On the average, one out of four photons, or units, of light causes the emission of one electron from the plate.

The electrons are then focused and speeded to the target photographic plate by a potential difference of 30,000 volts, in the same manner as in the electron microscope.

When light falls directly on a photographic plate, only about one in 200 of the light units reacts with the emulsion to give an image. The antimony-cesium photoelectronic plate thus has a 50 to one advantage over a photographic plate used alone.

Since the photoelectric plate operates only in a high vacuum, it is first placed in an inner airtight container inside the part of the new instrument to be evacuated, and held off to one side by a magnet until needed. The air is then pumped out, and the star's image is focused on the spot inside the vacuum where the photoelectric plate will be.

After these two steps, the airtight inner container is broken and the plate moved to the telescope focus with the aid of two magnets. When the star's light hits the plate, the electrons are given off and speeded on their way to the photographic plate, giving about fifty times the efficiency of the star's light used alone.

On an electronic photograph taken with an exposure of five seconds, Drs. Lallemand and Duchesne have been able to resolve the fourth star of a grouping in the constellation of Orion, the hunter, although a sensitive photographic plate exposed for three minutes in the usual fashion shows only three of the four stars.

If the combination electronic-photographic instrument, which in its early stages is showing such great promise, can be developed to the point where it is technically feasible to use in routine laboratory work, other sciences beside astronomy, such as physics and biology, could also benefit from it.

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• RADIO

Saturday, Aug. 1, 1953, 3:15-3:30 p.m. EDT

"Adventures in Science" with Watson Davis, Director of Science Service, over the CBS Radio Network. Check your local CBS station.

Dr. J. W. Beams, professor of physics and chairman of the department of physics, University of Virginia, and Dr. William Parson, professor of internal medicine, University of Virginia Medical School, discuss "Whirling Research."

GENERAL SCIENCE

Manpower Limiting In Full Mobilization

➤ IF FULL mobilization were to come soon, the U. S. "would be likely to find that its limiting resource was manpower," the National Planning Association warns.

This country is some 40,000,000 short of being able to match man for man, the numbers of the Soviet Union.

As part of a long-range manpower policy, the Association suggests the establishment of a Civilian Reserve, "with periodic active service for which men would be released by their organizations on the same basis as for active military duty." They would form a competent and experienced civilian hard core of government "generalists" in such fields as transportation, industrial management, rationing, etc., in case of a new war.

In "Manpower: The Nation's First Resource" (see p. 60), the Association points out that in preparing our own long-term manpower policies, comparison should be made with Russian trends. The Russians are placing major emphasis on the training of technological personnel. At present they are graduating 30,000 engineers a year, from a five-year course of six-day weeks and ten-month years. The United States output is 23,000 from a four-year course.

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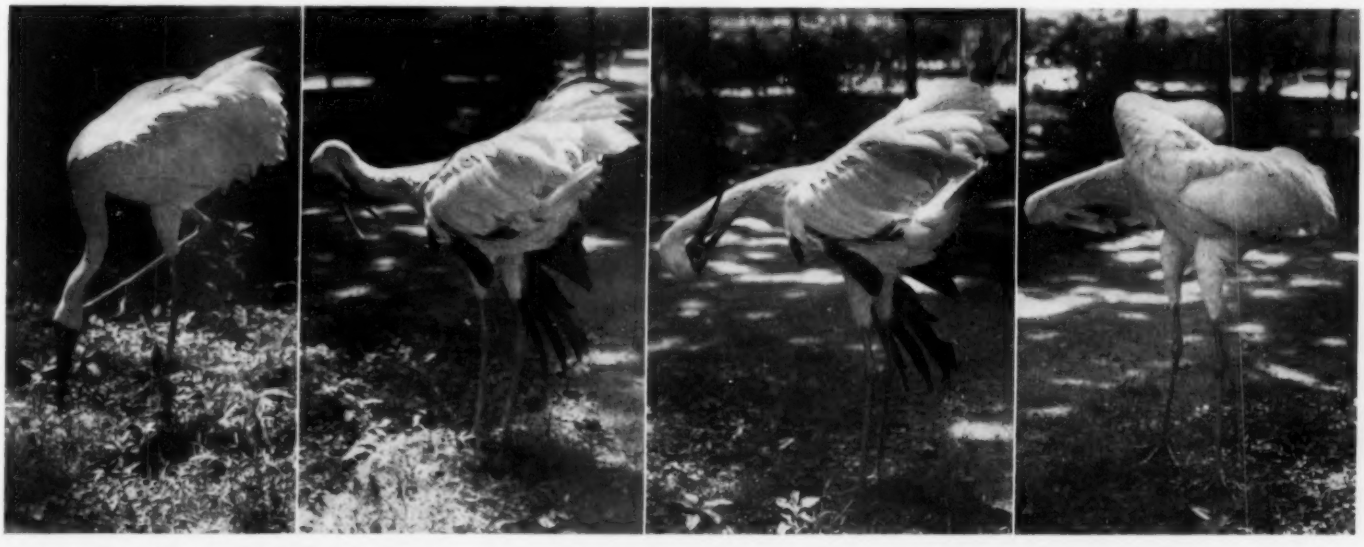

DANCE OF THE CRANE—This Siberian crane, a long-time inhabitant at the National Zoological Park in Washington, goes through a dance in the apparent wish to please keepers and spectators. He first plays dead, then gets up, as in the first picture. After seeming to strut, he ducks his head until his neck makes a loop. He then unloops his neck, throws his head high and tucks it under his wings, as shown in the last picture.

NUTRITION

Reducing by Bookkeeping

► FAT PEOPLE trying to lose weight need to keep books. This suggestion comes from Dr. Norman Jolliffe, director of the bureau of nutrition of New York City's Department of Public Health. At the meeting of the Institute of Food Technologists he gave the following advice to the reducers:

"The path is not smooth. You have to convince yourself of some astonishing facts, and then translate these facts into action. These are the hard facts:

"1. You become obese by maintaining a high intake of calories in connection with a low expenditure of same—a fine situation in the case of money but a bad one in the case of calories.

"2. You have to maintain a constant "calorie deficit" to lose weight—trick diets to get thin are fine if you don't revert, after you win through, to the one you were using before you went on it. (Most of us do.)

"3. You have to re-educate yourself in a dietary sense. It isn't any particular food that you need to avoid; what you need to do is to keep books. Learn the calorie values of the foods you are accustomed to eating and when the total mounts up toward the total amount needed to maintain your present weight—lay down the fork or spoon."

To be called "fat" in our day is offensive. But, Dr. Jolliffe pointed out, a few decades ago the word for most people did not have this connotation. In fact, the phrase "fat and healthy" was felt to be almost a redundancy. If you were fat, of course you were healthy.

Then the insurance companies began to take a look at what their actuarial experts had been uncovering and the medical profession to lend an ear to the diabetes specialists and the homely humor that attended the fat man began to give way to sympathy for the "obese."

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PSYCHOLOGY

Anger Sign of Neurosis

► THE PERSON who reacts to the stresses of our complex modern world with anger, fright, sadness, discouragement or shame is showing neurotic symptoms, Dr. Hardin M. Ritchey, a staff member of the Silver Hill Foundation, a hospital for mental and nervous diseases at New Canaan, Conn., has told the American Medical Association.

"Such people must resort to emotional behavior in order to protect themselves," he said. "These symptoms, however, are warning signals of maladjustment. For such individuals, psychotherapeutic reeducation can be a boon."

Such reeducation, he explained, is "based on the idea that man is not completely at the mercy of his environment, and unconscious; that to a reasonable degree he can control the process of shaping his life. It is a method of relatively short, intensive therapy (treatment) that is within the financial reach of everyone."

The actual process of reeducation, he said, follows these fundamental principles of treatment: 1. emotional release through talks with the physician; 2. reestablishment of the patient's confidence in his mental and physical self by showing him that his symptoms are due to a belief of inability to meet the problems of life and not to basic inadequacies; 3. an appeal to the patient's intelligence to help him understand his emotional life; 4. impartation of knowledge of body functioning; 5. provision of new interests; 6. explanation of positive thinking; 7. encouragement of spiritual orientation.

"We have found," Dr. Ritchey said, "that this method of rehabilitation provides the psychiatric patient with valuable physical, emotional, intellectual and idealistic equipment for handling his conflicts, guilts and frustrations. It has been our experience that in the ensuing years he finds continued satisfaction in his increasing ability to express his native energies in a manner that is acceptable to the society in which he lives."

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PUBLIC SAFETY

How to Guard Against Accidents From Boating

► MANY OF the drownings and other water accidents during the summer involve boating, canoeing and sailing, and the handling of small craft. Only about half of the drownings are swimming accidents.

Pat Murphy, assistant director of Safety Services of the American National Red Cross, discussing summer safety over the CBS Radio network as a guest of Watson Davis, director of SCIENCE SERVICE, pointed out: "Most of these accidents are due to the fact that people venture out in small craft without knowing how to swim and without having any knowledge of skills of operating small craft or of personal safety skills."

Here are a few rules about small craft safety:

1. Don't overload your boat.

2. When entering, leaving or changing places in a boat or canoe, keep the weight low and well centered. Don't stand up in a boat or canoe. In a canoe, kneel or sit on the bottom instead of on seats.

3. If you're using a motor, match the motor to the boat. Get expert advice on this.

4. Most important of all, remember that any wooden boat or other boats with good air tanks will float when overturned or even when filled with water. Don't give up the ship. Use it as a life preserver.

5. Learn how to handle the craft before you take to the waters. Many Red Cross chapters offer courses in boating, canoeing and sailing.

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AERONAUTICS

Plane Similarities

Aircraft designers in both Russia and the United States, working with about the same background information, are likely to have come up with similar designs.

► SIMILARITIES BETWEEN the Russian MIG-15 and the latest U. S. planes do not necessarily mean that top secrets have been smuggled behind the Iron Curtain from the U. S.

A recent report links a National Advisory Committee for Aeronautics scientist with the Rosenberg spy ring. The scientist, 34-year-old William Perl, was tried and convicted of perjuring himself in connection with the Rosenberg investigation.

Perl subsequently was denied $20,000 bail after U. S. attorneys informed Judge Sylvester J. Ryan that the FBI had evidence linking the aeronautical scientist with Julius Rosenberg.

Perl, who worked for the NACA at its Cleveland, Ohio, laboratories, was in a position to supply information "which could fill out a bigger picture of a whole field of information," said Dr. Hugh L. Dryden, NACA director.

But another NACA spokesman said this was not an accusation. Thousands of military and civilian personnel have access to secret information in this country that could help Russia.

The similarities of the Russian-made MIG-15 and America's planes could, however, have resulted from independent research.

The apparent similarities are these: the high positioning of the tail with respect to the wings, and the swept-back tail elements.

The NACA spokesman pointed out that positioning the tail high above the wing of the plane was being developed almost simultaneously in Germany and by the NACA during World War II. It was an "obvious" answer to a severe buffeting problem associated with high-speed planes.

At the close of the war, teams of U. S. and Russian aeronautical experts, working separately, questioned top German aircraft designers to learn what the Germans had been working on. It was during some of these sessions that American experts learned of the German Tanke-138, which somewhat resembles the F-86 Sabrejet now fighting in Korea.

In 1944, the Ta-138 took top prize in an interceptor design competition sponsored by Hitler to get Germany a better interceptor plane. The plane had a top design speed in excess of 600 miles an hour—a speed that nudges the sonic barrier.

Russian and American aircraft designers working with nearly the same background information thus quite likely could have produced planes of similar design characteristics in principle.

The NACA spokesman said he knew of no case in which secret research information had leaked from the aeronautical research organization to Russia. Although the NACA regularly publishes "Technical Notes," concise, scientific reports on experiments, none of these contain classified data.

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MARINE BIOLOGY

Summertime Oysters Plagued With Parasite

► THE OLD-TIMERS had a point about "cold water" months being the best months for oysters, research at the Virginia Fisheries Laboratory, Gloucester Point, indicates.

Dr. J. D. Andrews, oyster biologist at the Laboratory, reports that about 80% of oyster deaths studied that occurred from July to October were closely associated with the presence of a microscopic fungus parasite on the oysters. During winter months, the parasite was less frequently found, and practically disappeared from February to May.

The old saying that oysters are only good to eat during months with the letter "r" in their names—September to April—was based mostly on spoilage from lack of refrigeration, not on diseased oysters, however.

Oyster spawning during warm months may detract from their flavor or eye appeal. But with proper refrigeration, healthy oysters are generally safe to eat the year 'round.

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PHYSICS

Drops on Hot Stove Dance for Portraits

► DROPS OF water that dance upon a hot stove top have been posed for their portraits by high speed photography and an array of beautiful symmetrical patterns captured.

Norman J. Holter and Wilford R. Glasscock of the Holter Research Foundation, Helena, Mont., noticed the behavior of liquid drops, which float and vibrate on a film of their own vapor and evaporate slowly. Long known as the Leidenfrost effect and familiar to our grandmothers as they worked around an old-fashioned kitchen stove, the new observations were made to add knowledge of wave and vibration effects.

Various patterns and effects were obtained by use of high shutter speeds that froze the motion or low speeds that recorded one or more complete cycles of the dancing vibration.

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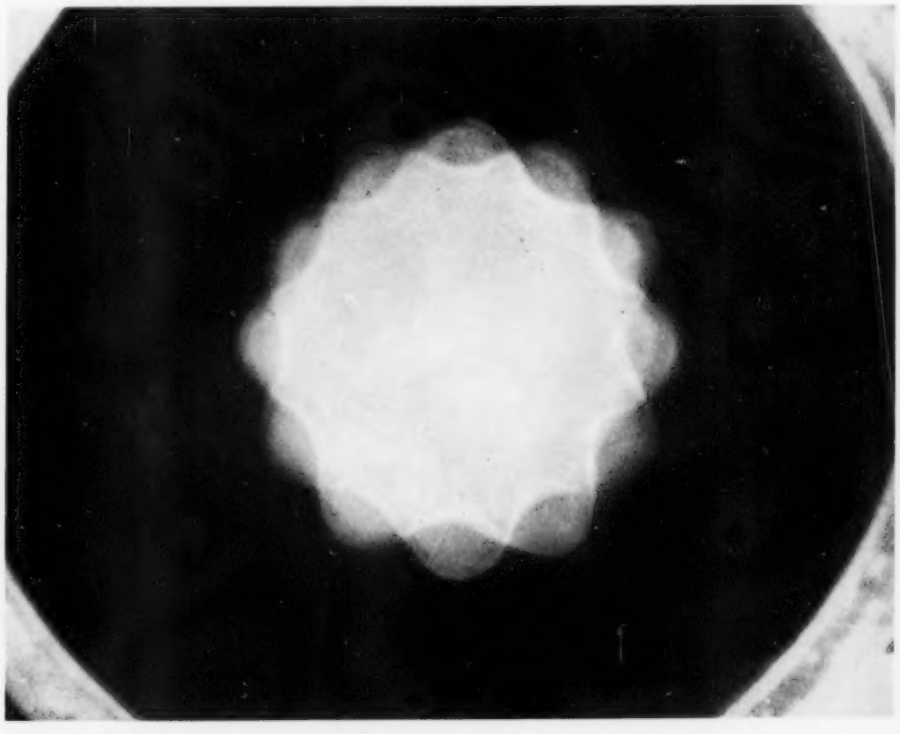

EVAPORATING DROP—The basically hexagonal pattern of a drop of water evaporating on a hot surface was obtained using a high shutter speed on the camera. The water had been treated with a detergent.

GENERAL SCIENCE

Mobile Columns Planned

Blast and fire are the most serious dangers from the atom bomb. Britain plans mobile columns stationed around but outside key target areas for rescue work.

► THE MUCH-TALKED-OF atomic radiation is one of the dangers least to be feared from the atom bomb. The most serious are blast and fire, in that order. Britain is planning "mobile columns" of a new sort to meet atomic emergencies.

Efficient warning systems, based on electronic equipment demonstrated at the Royal Aircraft Establishment, Farnborough, to NATO countries recently, would enable casualties to be cut, though they would still be substantial.

Latest ideas in civil defense against the A-bomb are emphasized in a series of films about the atom bomb recently produced for Britain's Home Office.

One clear fact that emerges from Britain's research is that widescale preparations must be made beforehand, in time of peace.

A city's telephone exchanges, for example, are normally in central positions. A bomb there would paralyze communications over a wide area and interrupt trunk lines. The answer may well be the provision of peripheral cables to bypass these exchanges.

Normal city water mains, even in peacetime, are often insufficient to deal adequately with a large fire. Britain plans to supplement them with surface lines made of the new polyethylene plastic.

Emergency kitchens would be necessary in large numbers to feed at short notice the tens of thousands of bombed-out persons.

Delicate instruments will be required to ascertain the extent of any residual radioactivity and to insure the protection of personnel by measuring the amounts to which they have been individually subject. Respirators must offer protection against all foreseeable chemical and bacteriological weapons and yet, at the same time, allow the wearer maximum freedom of movement.

In all these spheres a great deal of work has already been done. In most cases apparatus of a satisfactory design has been made and is now in production on a limited scale, compatible with the many other calls on industrial effort.

One of the most difficult problems, however, lies outside the realm of mass production. It is that of formulating sound tactics and strategy to deal with serious incidents. The position was admirably stated by Maj. Gen. Stephen Irwin, chairman of Britain's Civil Defense Joint Planning Staff, when he said:

"Atomic weapons have brought no new problems that cannot be dealt with by our scientists, firemen, wardens, and doctors. It is only when the scale of the threat is multiplied many times, when there are more fires than our firemen can deal with, when more people are trapped than our wardens can reach, and when medical services are swamped, that things become critical."

One answer is the "mobile column," the main purpose of which would be the saving of lives. On them would rest the main responsibility for extracting casualties and releasing trapped people from the devastated area.

As presently planned, these mobile columns would each comprise 860 men and women, divided into headquarters, three rescue groups and an ambulance group, each self-contained and self-sufficient, all under a single commander but able to operate independently where necessary. Essential features of such columns are that they should be flexible and yet large enough to be individually effective.

It is estimated that Britain will need something like 300 such columns stationed around but outside key target areas with a substantial number in the various regional reserves.

As an initial experiment an Experimental Mobile Column has already been formed in Britain, chiefly from service elements, and is touring the United Kingdom, taking part in various exercises and generally putting the idea to test.

Deployment of mobile columns and fire columns, which are under separate and specialist command, is complicated by the fact that, whereas conventional explosive causes buildings to crumble about their own foundations, the sustained blast of an atomic bomb pushes buildings over sideways so that they block adjoining streets.

An area two or more miles across may thus be denied to fire engines, ambulances and rescue vehicles. The only way in or out would be by climbing over a desert of smoking rubble. In such a situation good communications are absolutely vital.

United Kingdom plans would also make extensive use of radio and a number of simple, lightweight sets, ideal for the purpose, are already being used experimentally, and even operationally, by police, fire and ambulance services, thus demonstrating other aspects of civil defense organization.

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LESSER PANDA — The only old-world representative of the raccoon family, this newly arrived panda can be seen at the National Zoological Park, Washington.

MEDICINE

Rheumatism in Old Age Is Usually Benign Type

► OLDSTERS ALMOST always get a kind of rheumatism called hypertrophic arthritis. This is a degenerative joint disease but is not the same as rheumatoid arthritis.

The hypertrophic kind is usually progressive and irreversible, but at the same time it is non-incapacitating. For this ailment in old people, physical treatment is valuable, Dr. Harold Dinken of Denver pointed out to the American Medical Association.

Because of the chronic nature of the disorder, however, every effort must be made, Dr. Dinken said, to teach the patient or some responsible member of the family how to carry out the treatment at home. This is also important from the standpoint of economics and convenience.

"Heat is indicated for the relief of pain," he said. "In most instances, superficial techniques are adequate. Hot packs, paraffin, infrared, luminous and warm tub are included in this category. Short wave diathermy or microwaves are occasionally necessary for the production of deep heat. Their use should be restricted to office or hospital and hence are not practical in a long range treatment program.

"In many patients, the presence of arteriosclerotic obliterative vascular disease (a narrowing and closing of arteries due to hardening) precludes the use of any intense heat locally. Only the mildest heat directly over the peripheral joints should be applied.

"As a rule, a light sedative massage following the heat will add to the patient's comfort. An active exercise program attempting to maintain mobility of the involved joints should round out the treatment session. Degenerative changes in certain locations may require additional techniques."

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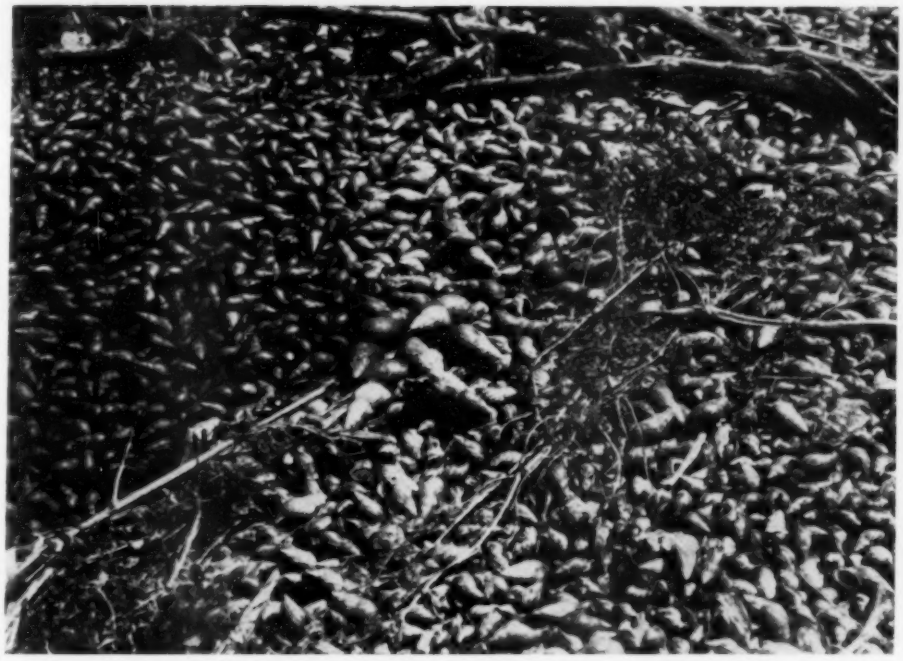

DEAD GIANT SNAILS — A pile of approximately 10,000 giant African snails, collected and killed by a farmer on Guam, are shown here. Some extra large specimens, over seven inches long, are in the collection.

ZOOLOGY

Kill Giant African Snails

► CANNIBALISM IS being promoted in the South Seas to solve certain population problems there. As a matter of fact, a scientist went to Africa to select about a hundred choice cannibals for the Pacific islands.

The cannibals are flesh-eating snails, *Gonaxis kibweziensis,* natural enemies of the giant African snail, *Achatina fulica,* which has become a major agricultural pest in the Pacific.

After the introduction of the cannibal snails, the African snail population on the highly infested island of Agiguan, near Guam, declined almost 20%, reports Dr. Yoshio Kondo, mollusk expert with the Bishop Museum in Honolulu.

The African snails, which average four inches long when full grown, were spread from Africa to the Pacific, probably through the agency of man. During World War II, the Japanese introduced the snail to several islands as a source of food for their troops. The giant snail, unhampered by its natural enemies, multiplied tremendously to become an agricultural menace.

After the war, the fight against the snail began. F. X. Williams of the Hawaiian Sugar Planters' Association went to Kenya, British East Africa, to search for the snails' natural enemies. He sent 97 cannibal snails from Kenya to Dr. Kondo in Honolulu. Only seven survived, but in two years those seven had multiplied into 11,000.

Then in 1950, these cannibal snails, and others supplied by the U. S. National Museum, were shipped to Agiguan and released. A recent survey by Dr. Kondo showed a decrease of nearly 20% in the giant snail's numbers on the island.

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TECHNOLOGY

Electronic "Hand" Sends Elevators Up and Down

► AN ELECTRONIC "hand" rests lightly on the controls of a bank of new elevators in New York. It gives better up-and-down service in office buildings than human operators can deliver.

Displayed in model form, the Otis elevators capitalize upon the ability of electronics to make fewer errors in judgment than human operators. The bank of elevators "thinks for itself" in analyzing passenger requirements and in selecting the correct traffic program to speed passengers to and from their floors.

Adaptable for use in most office buildings, stores and hospitals, "autotronic elevatoring" relies upon six basic control programs: balanced up-down, heavier-down, heavier-up, up-peak, down-peak and intermittent. These control programs permit the elevators to handle rush traffic at lunch and quitting time with maximum efficiency, the company reports.

Science News Letter, July 25, 1953

MEDICINE

Leukemia Victim Takes Record, Lives 29 Years

► A RECORD survival of 29 years after diagnosis of chronic lymphocytic leukemia is reported to the *Journal of the American Medical Association* (July 11) by Drs. Arthur A. Marlow and Grant R. Bartlett of La Jolla, Calif. The patient was a businessman who died last year at age 74.

A more optimistic view of chronic leukemia, a blood cell disease, is justified than the average rates of survival usually cited, the report indicates. One other case of 25 years' duration was reported some years ago, while average rates of survival run about eight years.

The unusual occurrence of acute leukemia in boy twins, causing their death at ages 18 and 24 months, was reported by Dr. Jean V. Cooke of St. Louis, Mo. Only four other such cases have been reported in medical literature.

Science News Letter, July 25, 1953

AGRICULTURE

Waste Shells and Pits Find Use in Industry

► NUT SHELLS and fruit pits now can be ground up and used as anti-skid agents in car tires, "fillers" in fine plastics, litters for poultry-house floors, and blasting grits for cleaning airplane engine parts.

T. F. Clark and E. C. Lathrop have reported to the U. S. Department of Agriculture that about a billion pounds of such materials are discarded yearly in this country by fruit canneries and nut-processing companies.

Pits of apricots, cherries, peaches and dates can be ground up for further utilization. Almonds, coconuts, filberts, peanuts, pecans and English and black walnuts are among nuts having shells suitable for grinding.

Relatively coarse particles of hard shells can be incorporated into auto and tractor tire treads. They give superior non-skid and traction properties. When finely ground, they make good fillers for plastic molding compounds.

Nut shells and fruit pits also can be used to clean furs and to control the degree of porosity of bricks and ceramic ware. Ground peanut shells can be worked into "noreseal," a cork substitute developed during World War II by the Department of Agriculture.

Grits made of walnut shells and apricot pits have been used satisfactorily to clean aircraft engine parts by grit blasting.

The new uses for pits and shells were developed at the Bureau of Agricultural and Industrial Chemistry's Northern Regional Research Laboratory at Peoria, Ill., by Messrs. Clark and Lathrop. Details are revealed in a free booklet (AIC-352) which may be obtained from that laboratory.

Science News Letter, July 25, 1953

MEDICINE

Cleft Palate Handicap Overcome By Thousands

➤ ONE OUT of every thousand children born alive has a cleft palate or harelip, but there is a better chance than ever before of overcoming this handicap.

The U.S. Children's Bureau declares that it does not necessarily bar a person from any line of work. A new bulletin (see SNL, July 18, p. 44) states:

"Thousands of men and women born with a cleft palate have become business leaders or hold responsible, well-paying professional jobs, often where good speech is highly important."

Plastic surgeons can make a cleft lip look natural, and the operation is done shortly after birth. A cleft palate is usually much more complicated. In some children, an operation may be done at about two years of age, in others it is delayed until the fourth or fifth year. For others, an operation is not needed. Where the top of the mouth did not grow together can sometimes be remedied by an artificial palate.

No condition which parents or physicians could control has yet been shown to cause clefts in children.

Science News Letter, July 25, 1953

ARCHAEOLOGY

Live in Cave Home Of Stone Age Baby

➤ THE MOUNTAIN cave in Iraq in which the bones of an Old Stone Age infant were recently found by a Smithsonian Institution anthropologist holds, under its floor, a continuous record of the handiwork of man from perhaps 100,000 years ago until the present day.

Shanidar Cave, in the Baradost Mountains, is still lived in. The present tenants lined up, agog with interest, to watch the scientists dig and, like "sidewalk superintendents," to give advice.

Dr. Ralph Solecki, Smithsonian scientist, made a preliminary study of the cave last year. In his first scratchings of the surface of the cave floor, he found so much of intense archaeological interest that he applied for a Fulbright grant to continue the work. Since his application received the support of the Iraq museum, it was granted.

Caves in the vicinity were searched in 1950 for evidence of Old Stone Age Man by a joint expedition of the Peabody Museum of Harvard University and officials of the Iraq government. Dr. Henry Field, director of the expedition, reported his findings in SCIENCE NEWS LETTER (July 29, 1950, p. 74).

In Diana Cave, 3,500 feet up on Jebel Baradost, painted pottery with incised designs was found. This pottery was used by some unknown housewife about 5,000 years before the birth of Christ.

In another cave in nearby Iran, Dr. Field found flint implements and flakes made by hunters of the Old Stone Age. No human bones of Stone Age Men were encountered at that time.

The skull of the child's skeleton found by Dr. Solecki was badly collapsed, he reported to the Smithsonian. Not until it is painstakingly pieced together like a jig-saw puzzle will it be possible to tell what type of early man is represented. The baby was between eight months and one year old when it died.

Science News Letter, July 25, 1953

OPHTHALMOLOGY

Stay in Dark Before Using Eyes in Dark

➤ IF YOU want to see well on a dark night, you had better stay in the dark for 30 minutes before you are going to want to use your eyes.

Practical experience in the armed services has shown that you can see well enough for most purposes if you protect your eyes for a half hour ahead of time with red goggles. Using the red goggles you can then consult instruments, read maps or even pick up a book in a normally lighted room or airplane cockpit.

Some experiments have even suggested that the red goggles give better dark adaptation than does complete darkness. But new experiments show that darkness is really better, especially for the first few minutes after the goggles are removed and the eyes put to work.

The new experiments are reported by Dr. Walter R. Miles of the Psychological Laboratories, Yale University, to the *Journal of the Optical Society of America* (June.)

To get completely comparable results, Dr. Miles tried out both methods of dark adaptation on the same persons at the same time. He put red goggles over one eye of the subjects and an opaque cardboard that cut off all light over the other eye. The eye from which all light was kept out was the better adapted for vision in darkness.

However, this finding need not affect the practice in the armed services, Dr. Miles says. The complete success of the red goggles in preparing men for effective night vision on outdoor missions has been demonstrated in practice.

Science News Letter, July 25, 1953

BIOCHEMISTRY

Animal Starch Plays Role in Sterility

➤ A FORM of animal starch, called glycogen, seems to play some role in sterility in women and also in uterine cancer, Dr. William B. Atkinson, University of Cincinnati anatomist, told a seminar held at Jackson Laboratory, Bar Harbor, Me.

Researches under way are aided by the staining of this starch a vivid red, which allows the location of the chemical in the animals studied.

Science News Letter, July 25, 1953

IN SCIEN

MEDICINE

Grant Two Patents Parents Should Note

➤ A MAN who evidently believes not in sparing the rod but in using the rod sparingly has invented a paddle which will not let a parent hit his child too hard. It has a breakaway handle, so that the paddle portion, if used with too great a force, dangles uselessly by tapes from the handle. This inventor is George F. Jorgenson, Norfolk, Va., and he received patent number 2,645,488, for his paddle of the golden mean.

The patent says the paddle portion is "of sufficient area to contact a substantial area of the rump of a child."

For younger children, Warren G. Davis, Madisonville, Ky., has invented an automatic baby carriage rocker. It consists of an electric motor mounted below the crib of the carriage. It has an automatic timer for turning it off when desired. Patent number is 2,644,958.

Science News Letter, July 25, 1953

TECHNOLOGY

Teletypewriters Send 100 Words Per Minute

➤ NEWS SOON may click into newspaper offices over new teletypewriters than can spell out 100 words a minute. Present machines transmit about 60 words a minute.

Developed by the Teletype Corporation for use in the Bell System, the new machines proved so successful that the Navy and Air Force now are installing them on ships and in areas not served by communications companies.

The new teletypewriter is quieter in operation, more pleasing in appearance and requires less maintenance than current machines. Its type can be changed in a matter of seconds when different typefaces are desired. Ribbons last twice as long in comparison to those serving on present machines.

Each type character is set on an individual pallet. The pallets are arranged in four horizontal rows, each carrying 16 characters. They are housed in a box one-half inch thick, one inch wide and two inches long.

When a key is struck, the type-carrying box is positioned automatically so the character will print where it should. A tiny hammer strikes a pin protruding from the rear of the pallet. This prints the letter on the paper.

The new machines will begin clicking out messages for the Bell System after urgent military orders have been filled.

Science News Letter, July 25, 1953

SCIENCE FIELDS

ENTOMOLOGY

Trace Flies' Flights With Colored Threads

➤ IF A fly carrying a brightly colored streamer with him through the air lights in your yard this summer, do not be alarmed.

Your unexpected guest will probably be one of the thousands of flies tagged with nylon threads of red, blue and other colors by the U. S. Public Health Service for experiments in normal flight range, rate of disperson, reaction to insecticides and other phases of the insect pests' life.

By tagging the flies with inch-long colored nylon thread, the PHS scientists are able to locate, recover and identify the insects after their release.

A mechanical fly-tagging device that speeds up the tedious process of gluing the thread on the small thoraces of the insects is described by Drs. John W. Klock, David Pimentel and Robert L. Stenburg of the PHS Communicable Disease Center, Savannah, Ga., in *Science* (July 10).

The new device holds 25 experimental flies, anesthetized with carbon dioxide, in an assembly line chamber. The nylon thread is fastened to the thoraces of the flies by glue from a small hypodermic syringe under which the flies are moved.

When this work had to be done by hand, unskilled workers could only tag about 800 flies a day. With the mechanical tagger, the output is nearly doubled, and without undue fatigue to the workers.

When properly attached, the inch-long threads do not interfere with the normal activities of the flies. No injury to the flies has been observed because of the tagging.

Science News Letter, July 25, 1953

HEMATOLOGY

Blood Grouping Tests Can Exclude Paternity

➤ ABOUT HALF of the men falsely accused of paternity can establish their innocence through use of blood grouping tests, Dr. Lester J. Unger, director of the blood and plasma bank of University Hospital, New York University-Bellevue Medical Center, declares in the *Journal of the American Medical Association* (July 11).

"Blood tests may exclude paternity, but they can never prove it," Dr. Unger explains. "Nevertheless, on occasion, even non-exclusion, although not proving paternity, has allayed a husband's suspicions and saved a marriage."

Only three blood group systems are made use of legally, although there are at least nine independent blood group systems. The ones commonly used are the A-B-O, M-N, and Rh-Hr systems and they are used simultaneously.

The various systems of blood grouping result in more than 50,000 different varieties of blood. Dr. Unger suggests that the complete blood grouping may some day rank with a person's fingerprints.

Science News Letter, July 25, 1953

GEOLOGY

Bore 10,530 Miles In Petroleum Search

➤ PROSPECTORS BORED 10,530 miles down into the earth last year in the stepped-up search for new oil and natural gas deposits in the United States.

Of the 12,425 exploratory holes drilled in 1952, totaling 55,615,389 feet, 2,335 became producers. One successful hole was drilled for every 4.3 dry holes. Average depth of the exploratory holes was 4,476 feet.

Comparative figures show a steady growth in number and efficiency of petroleum exploration for the United States in recent years. In 1939, less than 3,000 exploratory holes were drilled, while over 8.5 holes were drilled for every one that became a producer.

By 1951, exploration had increased to 11,756 holes a year, with one producer discovered for about every 4.2 holes drilled.

These figures were reported in the Bulletin of the *American Association of Petroleum Geologists* (June) by Dr. Frederic H. Lahee, chairman of the association's committee on exploratory drilling statistics.

Science News Letter, July 25, 1953

ZOOLOGY

California Reptiles Stay Unchanged 20,000 Years

➤ SUDDEN CLIMATIC changes in southern California during the past 20,000 years that wiped out such large animals as the saber-tooth tiger, the ground sloth and the mastodon, apparently had little effect upon reptiles in the same area.

Bayard Brattstrom, University of California at Los Angeles zoologist, recently examined a collection of bones from Los Angeles' famous La Brea tar pits. The examination indicated that small reptiles and amphibians common to southern California have existed for the last 20,000 years just about as they do today.

Such common present-day animals as king snakes, rattlesnakes, fence lizards and western toads were included in the collection. They showed little change in structure over the centuries. The bones of only one extinct animal, a type of toad, were found.

"It is difficult to determine the exact time that these animals existed," the U.C.L.A. zoologist says. "But there is evidence that many of them may have been trapped in the bubbling tar some 15,000 to 20,000 years ago."

Science News Letter, July 25, 1953

AGRICULTURE

New Tobacco Variety Resists Wilt Disease

➤ A NEW tobacco variety, highly resistant to destructive bacterial wilt and from 5% to 18% more productive than current wilt-resistant varieties, has been developed for flue-cured tobacco fields of the south.

Called Dixie Bright 28, the new variety was developed jointly by the U. S. Department of Agriculture and the North Carolina Agricultural Experiment Station. In tests on value per acre of tobacco, Dixie Bright 28 was 8% higher than Dixie Bright 27 and 21% above Oxford 26, the two wilt-resistant varieties now grown commercially.

The Federal-State scientists who bred the new variety recommend that Dixie Bright 28 be used only where the tobacco disease, black shank, is not present. It has no resistance to that disease.

Science News Letter, July 25, 1953

INVENTION

Rear View Mirror Has No Blind Spots

➤ A REAR view mirror that gives the driver a look at everything behind him at one glance and has no blind spots has been invented. The driver sees this panoramic view by glancing at a set of mirrors on his dashboard, according to Inventor Ronald N. Darroch, Detroit, Mich.

The invention, patent number 2,645,159, consists of two or more sets of three mirrors each. One of these three mirrors is located on the dashboard. The other two are housed in a sort of dome on the roof of the car. One faces the rear. The other reflects the image of the rear down onto the dashboard mirror.

A series of these sets of three mirrors, so placed that their images overlap, give the panoramic view, the inventor says.

Science News Letter, July 25, 1953

PSYCHOLOGY

Protect Badly Treated Children From Pictures

➤ NEWSPAPERS ARE taken to task for publishing pictures of children inhumanly treated by parents by being chained or tied up. *The Journal of the American Medical Association* (July 11) makes a plea for the protection from unnecessary public display of children "whose only crime is to have the wrong parents."

Children feel deeply hurt when they believe they are betrayed by their parents, teachers and friends, the editorial explains.

Report the story, the editorial advises, but publication of a picture in which the child can be identified even by strangers may profoundly affect the future life of a normal child thus held up to public ridicule, taunts and even well meant sympathy.

Science News Letter, July 25, 1953

ASTRONOMY

Vega Shines High Overhead

Most brilliant star of the summer sky can be seen close to the zenith. Perseid meteors flash as fast as one a minute around August 11.

By JAMES STOKLEY

▶ HIGH OVERHEAD on August evenings stands the most brilliant star of the summer sky, Vega, in Lyra, the lyre.

The accompanying maps show its place about ten p.m., your own kind of standard time, at the beginning of August, and an hour earlier at the middle. (Add one hour if you are on daylight time.)

Then it is close to the zenith—the point directly overhead. Two other stars of the first magnitude are close by.

Just to the east we find Cygnus, the swan, in which Deneb stands, marking the bird's tail. To the south is Aquila, the eagle, in which the star Altair can be identified.

Looking to the west one sees the figure of Bootes, the bear-driver, in which is Arcturus, the second brightest star now visible. One way of locating it is to look in the northwest for the familiar great dipper, which is part of Ursa Major, the great bear.

At the lower part of the dipper are the pointers, whose direction, followed upwards and to the right, leads to Polaris, the pole star. But if the curved handle of the dipper is continued toward the south it leads right to Arcturus.

Fifth, and last, of the first magnitude stars that are shown is Antares, in Scorpius, the scorpion, low in the south. The red color of this star accounts for its name, which means "rival of Mars," since that planet is also famous for its redness.

Few First Magnitude Stars

Although the August evening skies contain fewer first magnitude stars than those of any other month, the present skies contain various other features of interest. Just to the west of Vega is Hercules, the champion, of which six stars form a gigantic butterfly, flying toward the west.

Just south of Hercules we see the large constellation of Ophiuchus, the serpent-bearer, referring to the snake which he is supposed to be holding, and which is represented by the constellation of Serpens. The head of the reptile is the part toward the east, and the tail that which lies to the west of Ophiuchus.

High in the west, just below Hercules, is Corona Borealis, the northern crown, a pretty little semicircle of stars that can easily be identified. The head of Serpens is represented by an X-shaped group of stars just to the south of the crown.

Directly south, next to the curving tail of Scorpius, one sees Sagittarius, the archer, while higher in the sky, just above Altair, is Sagitta, the arrow. Whether it was fired by Sagittarius is not readily apparent!

No planet is shown on our map for August, but Saturn is visible earlier in the evening toward the west, in Virgo, the Virgin. It is close to the star Spica, which sets before the times for which the maps are prepared. Venus and Jupiter are both morning stars, rising in the east several hours ahead of the sun. Jupiter is higher, though not as bright as Venus. In addition, around Aug. 13, Mercury will make a brief visit to the morning sky, shining quite low in the east as dawn begins to break.

Good Meteor Seeing

August is a good month for observing meteors, or "shooting stars." These are best seen about Aug. 10 to 12, particularly after midnight, and they seem to radiate out of the constellation of Perseus, the champion, which our maps show low in the northeast. Hence they are called the Perseid meteors. They can be seen as often as one a minute at this time, considerably more than at other times.

Actually, it is an effect of perspective that makes these meteors seem to radiate from Perseus. If you are standing on the tracks of a long straight railroad, with telegraph wires on poles alongside, you will notice that all these parallel lines, tracks, wires, etc., seem to converge in the distance. If things were moving along these lines toward you, they would all seem to be radiating from the far-away vanishing point.

The Perseid meteors are moving through space in parallel lines, too, and it happens that each August the earth's orbital motion brings our planet into their path.

Of course, we cannot see them out in space—they are much too small. But as they enter the atmosphere, perhaps as much as a hundred miles above the ground, they are traveling at speeds of many miles a second. Gradually, as they get into air that is more and more dense, they are slowed by the friction and their energy of motion is released.

How Light Produced

It used to be thought that the glow of such a meteor, or shooting star, was merely due to the fact that the meteoric particle itself was heated to incandescence before it completely burned. However, it has been shown theoretically that not more than one percent of the light can originate in this way.

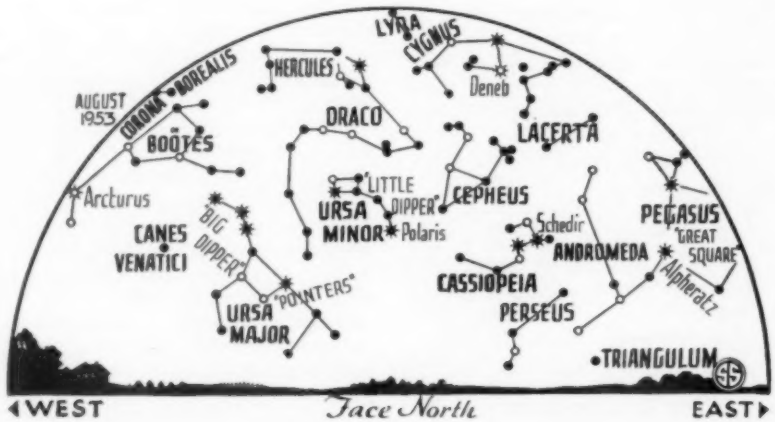
Studies of the light of a meteor with the spectroscope show that its spectrum is made up of bright lines against a darker background, and not of the continuous band of light from a glowing solid. Only glowing gases give a bright-line spectrum.

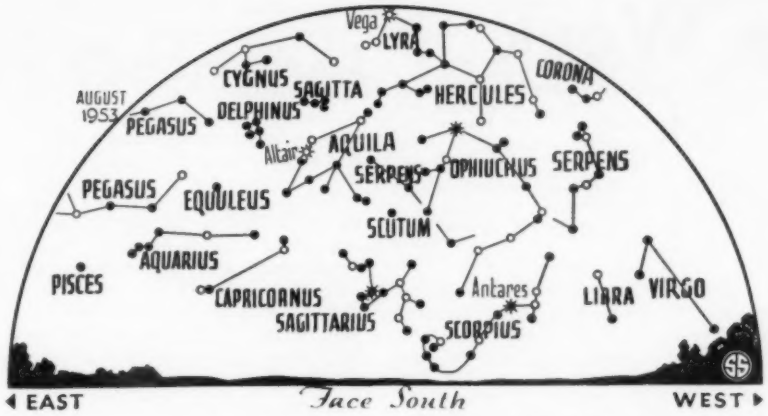
Apparently the meteor is accompanied by a tiny cloud of gas, and when this enters the atmosphere, its molecules hit molecules of air and the atoms are ionized or broken. As these atoms recombine, light is produced. Sometimes they may not come together immediately. Then a glowing trail may appear and persist, sometimes for seconds, or even for minutes.

Thus it is that the actual meteoric particle, which may be smaller than a pinhead, can produce enough light to be visible over a radius of many miles.

The paths in which the Perseid meteors are moving is shaped like a great elliptical ring, approaching the sun at one point and receding far in the distance in another. Their orbit happens to cross the orbit of earth at the position we occupy in August, and that is why we encounter them at this time.

Such an orbit is very much like a comet





☼ ✱ o • SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS

orbit. Actually, it is a comet orbit—that of Swift's comet, which was seen in 1862. Other meteor showers move in paths of other comets, so it seems that they are cometary debris, left over after the comet itself has been depleted.

When we have a meteor shower, it is best seen after midnight. In the evening hours, we are on the "hind" side of the earth, and any meteors that reach us must be moving fast enough to catch up with us. But after midnight, when we are on the forward side, we meet them head on. So if you want to see the Perseids at their best, stay up late on nights around the 11th and 12th, and watch the northeastern sky.

Sometimes the moon is so bright that its glare interferes with the meteors, but this year it will be new on the ninth, just about the time the shower is reaching its height, and even a few days later, the moon will be setting during the early part of the evening.

Thus in the morning hours you will have a completely dark sky in which to watch these fascinating "shooting stars."

* * *

Celestial Time Table for August

Aug.	EST	
1	10:16 p.m.	Moon in last quarter.
4	9:40 p.m.	Moon passes Jupiter.
5	9:10 p.m.	Moon passes Venus.
8	3:39 p.m.	Moon passes Mars.
9	11:10 a.m.	New moon.
		Partial eclipse of sun, visible in South Pacific and Antarctica.
12	early a.m.	Perseid meteors.
13	2:00 a.m.	Moon farthest, distance 252,200 miles.
	4:00 a.m.	Mercury farthest west of sun, visible for a few days around this date before sunrise.
15	6:13 a.m.	Moon passes Saturn.
17	3:08 p.m.	Moon in first quarter.
24	3:21 p.m.	Full moon.
25	1:00 p.m.	Moon nearest, distance 222,700 miles.
31	5:46 a.m.	Moon in last quarter.

Subtract one hour for CST, two hours for MST, and three for PST.

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PSYCHOLOGY

Cleft Palate Parents

▶ PARENTS of a child born with cleft lip, hairlip or cleft palate often need treatment more than the child, Dr. Herbert K. Cooper of Lancaster, Pa., reported to the American Dental Association.

This is because the parents may suffer more than the child in their unhappiness. If they feel guilty or to blame, though the condition is not their fault, they cannot give the child the kind of care he needs for developing a healthy personality.

"The over-protection which the average mother gives the patient is as great a hazard for the individual's future life as the deformity itself," he said.

Dr. Cooper, who has been widely honored for his activities as director of the Lancaster Cleft Palate Clinic, reported that one in every 700 infants is born with cleft lip or cleft palate or both defects.

He said the most effective treatment for the condition calls for specialists in various fields, working together.

Dr. Cooper said that while many states have recognized the problem of the cleft lip-cleft palate child by providing surgical care and hospitalization, it is now recognized that surgery alone is not adequate and, in some cases, is actually detrimental.

He described the longtime treatment of each case at the Lancaster Clinic and emphasized that decisions concerning treatment are made only at group consultations of all specialists concerned in the case.

Included are a child specialist or pediatrician, a surgeon, an orthodontist or dentist specializing in mouth irregularities, a psychologist and a speech specialist, all working as a team.

Science News Letter, July 25, 1953

PUBLIC HEALTH

Rules to Avoid Infection in Blisters

▶ BLISTERS MAY come from both ill-fitting shoes and ill-fitting stockings. But even with a good fit on shoes and stockings, the first long vacation hike or a new pair of shoes may produce a blister.

To avoid this, try using a liberal amount of talcum powder inside both shoes and stockings. Another way to guard against blisters is to strap adhesive plaster firmly over the part of the skin where you suspect rubbing will cause a blister.

A blister may seem like a triflng, if painful ailment, but blisters have been known to have a fatal result. The danger is that when the skin is rubbed off, germs may enter the body and cause blood poisoning. The unbroken skin over the blister gives protection against infection. Ideally, therefore, the blister should be covered with a sterile dressing and the affected part of the body put at rest so the skin will not be rubbed off.

Since this is usually not practical, medical authorities advise opening the blister under aseptic, that is germ-free, conditions. This requires sterilizing the skin by gently swabbing with an antiseptic solution, sterilizing the hands (or at least giving them a good soap and water scrubbing), and the needle.

The needle should be inserted in the skin just beyond the edge of the blister and the fluid pushed through the opening by gently pressing the edges of the blister. A sterile dressing then should be firmly bandaged in place.

If the blister has already been rubbed open, cleansing with a saturated solution of boric acid followed by the sterile dressing is advised by one authority. The solution is made by dissolving two teaspoonfuls of boric acid in a glass of water and is applied with sterile cotton swabs.

If this seems too complicated as a home remedy, see a doctor. Be sure to see a doctor if the blister seems inflamed or infected.

Science News Letter, July 25, 1953

GO PLACES

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Books of the Week

For the editorial information of our readers, books received for review since last week's issue are listed. For convenient purchase of any U. S. book in print, send a remittance to cover retail price (postage will be paid) to Book Department, Science Service, 1719 N Street, N. W., Washington 6, D. C. Request free publications direct from publisher, not from Science Service.

AMERICAN INDIANS IN THE PACIFIC: The Theory Behind the Kon-Tiki Expedition—Thor Heyerdahl — *Rand McNally,* 821 p., illus., $15.00. The author, who also wrote "Kon Tiki," presents evidence that Polynesia was first settled by people who sailed westward from Peru about 500 A.D., and that a second voyage was made about 1100-1300 A.D. by natives of Northwest America. He points out that natives of the two areas have similar physiques, customs, dress, words and tools.

BIBLIOGRAPHY ON PERSONALITY AND SOCIAL DEVELOPMENT OF THE CHILD. SELECTED ETHNOGRAPHIC SOURCES ON CHILD TRAINING—Christoph Heinicke and Beatrice B. Whiting — *Social Science Research Council,* 130 p., paper, $1.00. The first article includes 1,331 entries in the bibliography, while the second is classified by tribes representing the major cultural areas of the world.

CLAY MINERALOGY — Ralph E. Grim — *McGraw-Hill,* 384 p., illus., $9.00. Summarizes available data on the composition and atomic structure of the clay minerals, their physical characteristics, origin and occurrence.

CONFERENCES ON DRUG ADDICTION AMONG ADOLESCENTS—Committee on Public Health Relations of N. Y. Academy of Medicine and the Josiah Macy, Jr., Foundation—*Blakiston,* 320 p., $4.00. A synthesis of the over-all problem of teen-age drug addictions. Emphasis is on the fact that the problem cannot be dealt with apart from the fundamental causes creating known maladjustments and on the need for combined, constructive work on all fronts.

EDUCATORS GUIDE TO FREE FILMS—Mary F. Horkheimer and John W. Diffor, Eds.—*Educators Progress Service,* 13th ed., 516 p., paper, $6.00. This completely revised edition lists 2,574 films available free of charge, of which 562 are new additions to the listing.

ELECTRONICS: Buyers' Guide Issue, 1953—W. W. MacDonald, Ed. — *McGraw-Hill,* 848 p., illus., paper, $2.00. An important reference book for anyone having to do with electronic equipment. A directory of manufacturers in electronics, and graphical and tabular shortcuts for electronic engineers are included.

ELEMENTS OF CHORDATE ANATOMY—Charles K. Weichert—*McGraw-Hill,* 451 p., illus., $5.50. A condensation of the author's "Anatomy of the Chordates," designed primarily to serve as a text in a one-semester course in comparative vertebrate anatomy.

A FORMULA FOR CHILD SAFETY—*Metropolitan Life Insurance Co.,* 14 p., illus., paper, free upon request direct to publisher, 1 Madison Ave., New York, N. Y. Suggestions for avoiding a great majority of the 5,500 fatal accidents that occur annually in the young children's group, i.e., infants through 4 year olds.

HISTORICAL METROLOGY: A New Analysis of the Archaeological and the Historical Evidence Relating to Weights and Measures—A. E. Berriman—*Dutton,* 224 p., illus., $3.75. A history of weights and measures and their relationship to other units of measurement from the days of the Pharaohs to the present.

INDEX: Mass. Institute of Technology Radiation Laboratory Series — Keith Henney, Ed. — *McGraw-Hill,* 160 p., $4.50. Tells the whole story of the Radiation Laboratory, and contains a complete guide to the entire 27 volumes that comprise the series.

INDIVIDUAL AND COMMUNITY HEALTH—William W. Stiles—*Blakiston,* 492 p., illus., $6.00. Intended for those with a limited biological background, this begins with a discussion of "first aid," then treats of the biological aspects of health, and ends with a review of the social approaches.

INTO THE FREEZER . . . AND OUT—Donald K. Tressler, Clifford F. Evers, and Barbara H. Evers — *Avi,* 2nd ed., 246 p., illus., $3.75. Covers every phase of the subject from picking the right type of freezer, through the handling and packaging of frozen foods, to the storage and serving of various products.

MANPOWER: The Nation's First Resource—NPA Special Committee on Manpower Policy — *National Planning Association,* Planning Pamphlets No. 83, 53 p., paper, $1.00. This report stresses the acuteness of the manpower problem created by the low birth rate during the 1930's. (See p. 51.)

NATURAL HISTORY OF INFECTIOUS DISEASE—Macfarlane Burnet—*Cambridge Univ. Press,* 2nd ed., 356 p., illus., $4.50. The fundamentals of the subject and the structure of the book have not been changed in this revision, but a new section on the antibiotic drugs has been added.

1953 MEDICAL PROGRESS: A Review of Medical Advances During 1952—Morris Fishbein, Ed.—*Blakiston,* 301 p., $5.00 Written by 25 specialists, this is a record of the advances made in cardiology, surgery, uses of new drugs, allergy, and other medical fields.

PETROLEUM IN THE WESTERN HEMISPHERE—Western Hemisphere Oil Study Committee—*Independent Petroleum Assoc. of America,* 183 p., illus., $2.50. Results of a two-year study by 44 experts in petroleum production, geology, economics, law and engineering on all aspects of petroleum production and development in Western Hemisphere countries.

PHYSIOLOGY OF MUSCULAR ACTIVITY—Peter V. Karpovich—*Saunders,* 4th ed., 340 p., illus. $4.75. Two new chapters on "Nerve Control of Muscular Activity" and "Energy Cost of Various Activities" have been added, as well as material on the effects of hypnotism on physical performance, reaction time of athletes and allergic reactions to physical activities.

PSYCHOSIS AND CIVILIZATION: Two Studies in the Frequency of Mental Disease — Herbert Goldhamer and Andrew W. Marshall—*Free Press,* 126 p., illus., $4.00. Shows that there has been no increase in the frequency of the psychoses during the past one hundred years, but also that the chances of a person being stricken by a serious mental illness is about 1 in 20 by the age of 45 and about 1 in 10 by the age of 65.

REPRESENTATIVE AMERICAN SPEECHES: 1952-1953—A. Craig Baird, Ed.—*H. W. Wilson,* 199 p., $1.75. Includes 22 outstanding speeches covering events like the 1952 Presidential election, the tidelands oil debate, and U. S. foreign relations.

SOCIETY AND THE HOMOSEXUAL — Gordon Westwood—*Dutton,* 191 p., $3.00. An appraisal of homosexuality in every phase of its complex development and in its relationship with society.

STEPMOTHERS CAN BE NICE!—Helen Steers Burgess — *Public Affairs Committee,* Public Affairs Pamphlet No. 198, 28 p., illus., paper, 25 cents. Practical advice for the new stepmother.

TREES FOR AMERICAN GARDENS — Donald Wyman — *Macmillan,* 376 p., illus., $7.50. Evaluates 745 species and varieties of trees now being grown in America and recommends them for continued landscape planting, while relegating nearly 1,600 additional types to a secondary list as being inferior or no better than those in the recommended list.

THE TRIUMPH OF THE ALPHABET: A History of Writing—A. C. Moorhouse—*Schuman,* 223 p., illus., $4.00. The story of how men learned to write, from the marking on pebbles of the Old Stone Age to the classes to combat illiteracy in Mexico.

YOUR BODY AND YOUR MIND: The New Science of Psychosomatic Medicine—Frank G. Slaughter —*New American Library,* 192 p., paper, 25 cents. A physician tells the layman in nontechnical language how his mind and emotions can produce physical illness.

Science News Letter, July 25, 1953

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MARINE BIOLOGY

Whaling Season Hurt By Attacks of Sharks

► ATTACKS BY ravenous sharks hampered whaling activities in Australian waters last season, reports the U. S. Fish and Wildlife Service in the *Commercial Fisheries Review* (May).

Sharks were so bad off Point Cloates that whales killed outside the reef there were more than half devoured before they could be landed. Eighty sharks were shot attacking a single whale alongside a catcher vessel.

Science News Letter, July 25, 1953

MILITARY SCIENCE

Air Defenses Inadequate

➤ AMERICA'S AIR defenses are not capable of stopping an aerial attack upon this country. Gen. Curtis E. LeMay declared at the Institute of the Aeronautical Sciences meeting in Los Angeles.

The commanding general of the Air Force's Strategic Air Command said:

"Our own air defense system, I believe, is probably the most highly developed in the world today. Yet I do not think that the most optimistic of us feel it is capable of stopping a well-planned and coordinated bombing attack at this time."

The general pointed out that jet fighters, rockets and longer-range antiaircraft guns have strengthened the capabilities of U. S. air defense systems, but "there have been developments on the other side which favor offense and tend to counteract the advances made (here)."

Referring to America's offensive capacity, Gen. LeMay said bombing accuracy of Strategic Air Command crews had improved 600% in the eight years following World War II. He attributed the improvement to better equipment and continued bombing practice.

But the general expressed dissatisfaction with some of the electronic nervous systems that give life to modern airplanes.

"The mal-function of a single small vacuum tube in a bombing system can cause a 92-ton atomic bomber, with destructive potential of hundreds of World War II planes, to miss the target," he said.

Some of the electronic equipment, he said, "is just too complex for the function required of it." Although the picture as a whole is "not too bad," making electronic equipment more reliable is a "pressing concern to all of us."

The Strategic Air Command, whose headquarters are in Omaha, Neb., always is held in readiness, the general reported. Its bombing crews get weekly workouts and are kept up to date with revised training programs.

Science News Letter, July 25, 1953

VETERINARY MEDICINE

May Bar Mexican Beef

➤ AGAINST THE constant warning of the United States, the Mexican government has halted mass slaughter of cattle herds exposed to foot-and-mouth disease which has newly appeared in Mexico.

The warning was double: 1. If eradication by slaughter is not resumed, foot-and-mouth, or aftosa, will become a chronic, debilitating drain on the Mexican economy. 2. If the disease is not wiped out, the U. S.-Mexican border will be permanently closed to live cattle and fresh beef commerce. The United States is virtually Mexico's only foreign outlet for cattle.

The current foot-and-mouth troubles began in Mexico last May when an outbreak occurred in the state of Vera Cruz. Herds totaling some 500 animals were destroyed before popular reaction to slaughter caused the Mexican government to halt its slaughter efforts. Since the initial outbreak, the quarantine area has expanded to a 20-by-30-mile area, with new outbreaks uneradicated.

The Mexicans are banking on vaccination to control aftosa. The U. S. says "control" is not enough, and holds out for complete conquest of the disease. And until the disease is eliminated from Mexico, no livestock or fresh beef will be allowed to pass the border.

Where Mexico can turn for a market for her beef is a big question. Even Europe, where aftosa is well-established, will probably balk at receiving possibly infected animals. Her neighbors to the south will probably set up their own quarantine to protect their own herds from infection.

The U. S. Department of Agriculture has sent Dr. Charles U. Duckworth, internationally known expert on the disease, to Mexico City in an effort to break the deadlocked discussions. He can only tell the Mexicans what he knows as a scientist: that Mexico can be freed of aftosa with the "sanitary rifle;" that any less drastic measures will make the unwanted alien, aftosa, a permanent, unwanted part of Mexico's life.

Science News Letter, July 25, 1953

TECHNOLOGY

Robot Units Monitor Uranium Rolling Process

➤ A ROBOT system that is ten times faster and up to five times more accurate than previous systems in monitoring critical temperatures during uranium rolling operations has been developed by the Minneapolis-Honeywell Regulator Company, Philadelphia.

The new system is the first ever designed to supervise automatically the production rolling of uranium ingots. Its aim is to improve the accuracy of temperature measurements important in uranium and other rolling processes.

Radiation devices, called radiamatic pyrometers, function as pick-up elements comparable to electric eyes. They detect the temperature of the uranium ingot and relay the information to a series of electronic recording instruments. This information, which may report temperature conditions at several points in the production line, permits a single operator to make necessary adjustments.

The usual procedure is for mill operators to tell temperatures by colored crayon sticks, each with specific melting points. To obtain the ingot temperatures, the operator marks the ingot with the crayon stick. If the crayton stick with a melting point of 1,000 degrees Fahrenheit melts on application, the operator knows the ingot is at least that hot. A crayon stick with the next highest temperature is then applied. If this does not melt, the operator then calculates the ingot temperature lies somewhere in between.

Science News Letter, July 25, 1953

MEDICINE

Find Birth Strain Can Cause Epilepsy

➤ THE TEMPORARY shutting off of a baby's blood supply from a small portion of the brain during birth may be the cause of many cases of epilepsy.

Dr. F. M. Earle of the Universty of California at Los Angeles Medical School, Dr. Maitland Baldwin, University of Colorado Medical School, and Dr. Wilder Penfield, McGill University, Canada, studied 157 cases of epilepsy originating in the temporal lobe of the brain. Temporal lobe seizures constitute one of the largest of epileptic groups. Their study suggested that the epilepsy of more than 60% of this group had its origin in the strain of birth.

Apparently a tiny portion of brain tissue, containing three blood vessels leading to the temporal lobe was pushed through a small opening in the undersurface of the brain. This temporarily shut off the blood supply to the temporal lobe, denying vital oxygen to its tissue.

A permanent injury was caused. The injury, however, did not manifest itself in most cases until 15 or more years after birth.

The doctors emphasized that the injury seemed in no way related to instruments used during delivery. Many of the cases studied were normal birth in which no instruments were necessary for delivery.

Science News Letter, July 25, 1953

Science editor wanted for farming magazine

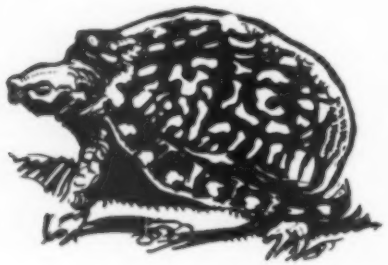
Academic training in agriculture and related fields necessary, plus practical or research experience in soil or agriculture. Writing ability of importance also.

Job involves supervision of research on experimental farm, writing of semi-technical articles plus doing of background research for general editorial program.

THE ORGANIC FARMER
Rodale Press, Emmaus, Pa.

BIOLOGY

NATURE RAMBLINGS



Turtles

➤ ALONG THE streamsides and in ponds in the country now, one can find turtles basking, for the turtle sleeps all winter, and loafs, with a little fishing, all summer.

One of the commonest of these reptilian armored "tanks" is the snapper, the most violent-tempered of the turtle tribe and the dread of the small boy or girl "in swimmin'." And it is true that once a snapper takes hold of anything, he will hang on a most desperately long time, so if it happens to be one's big toe he has gripped—

Turtles in general are about the strangest animal anomalies that have been evolved in the course of nature. They are the only surviving reptiles with anything like a complete bony external armor, although the horny plates in the alligator's skin recall the days when an animal knighthood was in flower in the Mesozoic, or middle ages of geology.

Turtles have no teeth, but a horny-edged beak, like a bird. When they are still in the egg shell, just about to break out into the world, young turtles have an even closer resemblance to birds, for the beak ends in a pronounced knob, useful in breaking through the shell; this knob, however, disappears soon after hatching.

The turtle is about as alien to our own way of living as anything could well be and still remain a vertebrate. We trust to physical speed and mental alertness for our safety and success in life; the turtle, having neither, has put his trust in armor — and thereby becomes even slower and duller.

He started down a blind evolutionary alley long ages ago; and it is one of the inexorable laws of evolution that once you get started in a certain specialized direction, there's no chance to repent. The moving finger writes, and having writ, moves on. So the turtle, having got himself in a box, must needs stay there.

Various species of snapping turtles are distributed throughout North America, from Canada to the Isthmus. Though never reaching anything near the size of the huge tortoises of the sea, some of the snappers become formidable enough, attaining a length of three feet and a weight of 40 pounds. These larger turtles are enemies of both fish and water fowl.

Science News Letter, July 25, 1953

PEDIATRICS

Hot Weather Baby Care

➤ BABIES NEED special care in hot weather. They cannot adapt themselves to heat as readily as grown-ups can. They should wear very light clothing or none at all, although they must be protected from drafts and from chilling at night.

The daily sunbath should be given at an earlier hour in the day in the summer than in the winter. An extra sponge bath at bedtime will be worth the trouble it gives mother in the comfort it gives baby. When he is made comfortable he is more likely to drop off to sleep without fretting and crying.

Mothers of young babies no longer dread the summer because of its threat to baby's life. The reason is because they have learned to guard against the germs which killed so many babies of an earlier generation in summer, the deaths being ascribed to "summer complaint" or summer diarrhea."

They know the baby's food and drinking water must be kept cold and clean and protected from flies or other insects that can carry disease germs.

Development of pure water and milk supplies have been an enormous aid for mothers and babies living in the cities. In the country, mothers themselves may have to take measures to insure the purity of water and milk for baby. The state or other health department can give advice as to the safety of a particular well or other water supply.

If there is any doubt about it, however, for example, when traveling with a baby, the water should be boiled. For very small babies, many doctors recommend boiling the drinking water anyway.

The mother who nurses her baby can be sure that she is giving him germ-free milk. For babies who do not get breast milk, canned milk is advised by many doctors because, among other advantages, it also is germ-free.

The question of whether baby is to be fed canned milk or pasteurized milk from the dairy should be settled on the advice of the doctor. Once the can of milk is open, however, it should be kept covered and cold, just as fresh milk should be.

Science News Letter, July 25, 1953

VETERINARY MEDICINE

Stainless Steel Joints For Pet Cats and Dogs

➤ PET CATS and dogs can now be given spare parts to replace worn out or damaged ones in their bodies, much as their masters and mistresses can.

Instead of being doomed to the life of a cripple or a mercy death because of a broken hip joint or bone disease, household pets can be operated on and walk normally again on "stainless steel joints."

The method, first used on humans about 10 years ago, was adapted to cats and dogs by Dr. Roger E. Brown, veterinary graduate student at Michigan State College, East Lansing, Mich.

Dogs regained full use of their legs and a normal gait within a week after the operation, Dr. Brown reported to the American Veterinary Medical Association in Chicago.

Five months after the operation one dog with two such steel joints jumped and played without sign of pain.

Before the operation X-ray pictures are taken to determine the size for the spare part. After the ball and shaft are shaped to fit into the bone and hip socket, the animal is put to sleep under an anesthetic, the diseased or broken bone is removed, and the steel replacement is installed.

Science News Letter, July 25, 1953

INVENTION

Secret Radio Sending Method Now Revealed

➤ A WAY of sending military messages by radio without fear of enemy interception, which has been kept secret since early in World War II, was revealed when its inventor was granted a patent.

In use, the system fooled the enemy by making it believe the transmission was for the purpose of jamming the enemy's radio signals.

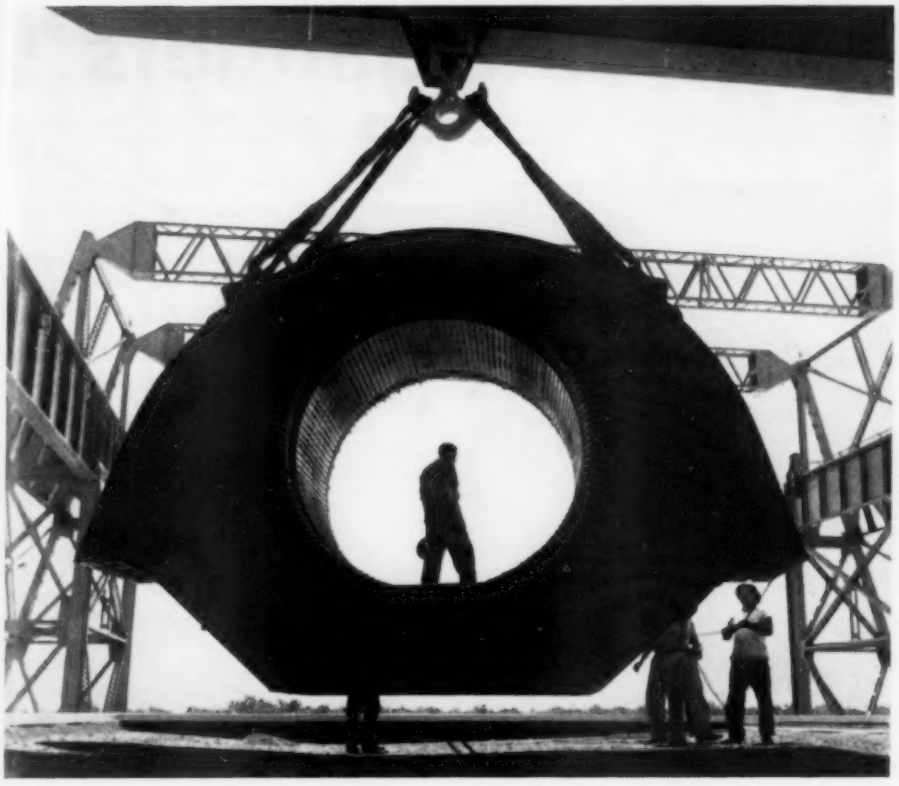
The patent was applied for by Norman H. Young Jr., Jackson Heights, N. Y., almost 13 years ago. He assigned it to the Federal Telephone and Radio Corp., Clifton, N. J., which recently became a subsidiary of the International Telephone and Telegraph Co., New York.

The system consists of two transmitters and two receivers. One transmitter sends out a jamming pulse at regular intervals. In the instant between two of these intervals, the other transmitter sends out part of the message. A high speed facsimile method of transmission is used.

One of the receivers hears the jamming pulses and utilizes them to trigger the other receiver into operation for receiving the facsimile messages. The patent is numbered 2,645,677.

A spokesman for I.T. and T. would not reveal the exact uses to which this system was put during the war or whether it is still in use.

Science News Letter, July 25, 1953



MOVING GIANT STATOR—The stator of the 83,000-horsepower motor being installed at the Air Force's Arnold Engineering Development Center, Tullahoma, Tenn., is shown being lifted by crane before being lowered to its concrete pedestal.

GEOGRAPHY

Log Cabins Disappearing

▶ THE LOG cabin, big talking point of the homespun political candidate of the last generation, is rapidly disappearing from the American scene.

From an estimated 15,000 log houses in Georgia in 1934, the number dwindled to a probable 10,000 to 12,000 in 1951. By the end of this century it is believed that all log cabins probably will have disappeared.

These figures are given by Wilbur Zelinsky, associate in geography at the University of Wisconsin, in reporting to the American Geographical Society's *Geographical Review* (April). He did not include the pretentious vacation lodges of the wealthy or boy scout cabins.

The genuine log house is made of round, undressed logs or of logs hewn with an ax or an adz (never sawed) to rectangular shape. They are held together at the corners of the building by some form of notching which requires no nails or other metal in the construction.

"Almost the whole of the gross material culture of the Georgia pioneer," Mr. Zelinsky said, "was based on the log. He lived in a log house and kept his livestock in log barns (if they were penned at all) and stored his implements and crops in log bins and cribs.

"If he took the trouble to build a fence around his fields, he split logs lengthwise and arranged them zigzag in a worm fence, again without the benefit of any metal except his ax blade. . . . This frontiersman worshipped in roughly built log churches; he sent his children to equally primitive log schoolhouses."

However, the log cabin was not introduced in Georgia by its English founders, because log construction was completely alien to the British Isles. It was unknown among the Indians. It was known, but very unimportant, in Spain and never brought by the Spaniards to the New World.

English-speaking frontiersmen learned how to build log cabins from the Pennsylvania Germans and then carried their skills westward and southwestward. Log building entered Georgia at the eastern edge of the Piedmont and quickly advanced with the frontier.

It never did become popular along the eastern sea coast, perhaps because the presence of artisans made sawed lumber relatively cheap.

Science News Letter, July 25, 1953

GENERAL SCIENCE

Manpower Rosters for Science and Engineering

▶ WHERE THE U. S. stands on one of its most precious and scarce defense resources—scientific and engineering manpower—will be more certain after completion of four national registers now being compiled.

The lists will show the number and the background training of geologists, veterinarians and specialists in the biological sciences. Mathematicians, physicists, chemists, meteorologists and engineers will also be catalogued by a punched card system.

Up-to-date information on about 100,000 scientists and engineers is expected to be available in less than a year. The registers will make locating scientists with special skills more easy. They are being prepared with the support of the National Science Foundation.

Science News Letter, July 25, 1953

Questions

AERONAUTICS—How can designers working in different countries come up with similarly styled airplanes? p. 53.

• • •

GENERAL SCIENCE — What are the most serious dangers from atom bombs? p. 54.

• • •

MEDICINE—What is the survival record of a leukemia victim? p. 55.

• • •

NUTRITION—How can bookkeeping help reducing? p. 52.

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OPHTHALMOLOGY—What is the best preparation for seeing well on a dark night? p. 56.

• • •

PSYCHOLOGY—What reactions are indicative of neuroses? p. 52.

• • •

TECHNOLOGY—How many words can new teletypewriters click off per minute? p. 56.

• • •

Photographs: Cover, U. S. Air Force; pp. 51 and 54, Fremont Davis; p. 53, Holter Research Foundation; p. 55, Yoshio Kondo; p. 63, Westinghouse Electric Corporation; p. 64, Eastman Chemical Products, Inc.

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⚙ *HOUSEHOLD FIRE alarm is compact, attractive and plugs into ordinary electrical outlets. Hung on the wall near any fire hazard, the devices uses no current until triggered by excessive heat. Then it rings loudly and penetratingly, warning the house owner of fire or an impending fire.*

Science News Letter, July 25, 1953

⚙ *UTILITY LEGS attach quickly to wood, masonite and many other materials, and are particularly good for use on ping-pong tables, work benches and laundry tables. Made of one-inch, 16-gauge steel tubing with a brown baked-on enamel finish, a set of the folding legs weighs only 12 pounds but will support nearly a ton.*

Science News Letter, July 25, 1953

⚙ *SOAP-TYPE ERASER is made of vinyl plastic resins and is said to remove pencil marks more quickly and thoroughly than conventional types. The eraser's resistance to crumbling enables it to outlast conventional soap erasers.*

Science News Letter, July 25, 1953

⚙ *SPRAYER ATTACHMENT screws on garden hose in place of the usual nozzle, as shown in the photograph. It uses special insecticide cartridges compounded to fight insect or plant pests. Other cartridges are available for car-washing or for spraying dogs. The chrome-plated attachment has an adjustable range of three to 25 feet.*

Science News Letter, July 25, 1953

⚙ *"ZIPPER" CLOTHESLINE does away with the need for clothespins. The clothesline has a "zipper"" that runs down the chrome-plated, stainless steel wire, permitting clothes to be inserted into the wire. Clothes are easily removed when the line is unzipped, even when the garments are frozen. The clothesline also comes in a pulley model.*

Science News Letter, July 25, 1953

⚙ *STEEL-WOOL HOLDER has a six-inch handle and protects hands so that rubber gloves do not have to be worn as a precaution. An automatic release rod simplifies the changing of steel wool pads. The rust-proof device helps the housewife clean those hard-to-reach places in deep pots, small-necked utensils and tall drinking glasses.*

Science News Letter, July 25, 1953

⚙ *"WHITE" LIGHT bulb features light levels of 50, 100 and 150 watts and is designed for use in single-socket portable lamps that lack diffusing reflector bowls. The new bulb is coated inside with white silica to diffuse light. Both bulbs and a new line of lamps soon are to be widely distributed, the maker reports.*

Science News Letter, July 25, 1953

⚙ *NEW ROSIN flux is said to be devoid of free acid and completely non-corrosive. Its ability to withstand prolonged applications of heat enables it to solder through badly oxidized copper surfaces, and many hard-to-bond metals and alloys. Its fast fluxing action particularly suits it to dip-tinning of printed circuits.*

Science News Letter, July 25, 1953

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Do You Know?

To de-emphasize the role of memorization, a college physics teacher has advanced the theory that each student should be required to bring to his final *physics* examination a "crib sheet" containing any information he desires.

A typical World War II *bomber* carried an 11-man crew and contained 10 miles of electric wiring; a new jet bomber carries a three-man crew and has 27 miles of wiring, exclusive of wiring in automatic equipment.

The International Labor Organization has found that more persons in the world live under thatch *roofs* than under any other type.

No one uses more than a small fraction of his *mental capacity.*